

Cap and Trade:

Multi-State

NO_x

Programs



Since 1999, the cap and trade mechanism has been used in the northeastern United States to reduce nitrogen oxide (NO_x) emissions in order to address the regional transport of ozone and facilitate attainment with the National Ambient Air Quality Standards for ground-level ozone. (Under the Clean Air Act, EPA establishes air quality standards for ozone and five other criteria pollutants to protect public health.) From 1999 through 2002, states in the Ozone Transport Commission (OTC) achieved summertime NO_x emission reductions from power plants and other large combustion sources in nine states and the District of Columbia. Most OTC states achieved further reductions under the NO_x SIP call in 2003; in 2004 additional states will participate in this larger NO_x Budget program.

The OTC NO_x Budget Program was the first cap and trade program formed by a group of states and represents the first large-scale application of the cap and trade model to a problem other than acid rain.

OTC NO_x Budget Program

The OTC was established under the Clean Air Act Amendments of 1990 to help states in the Northeast and Mid-Atlantic region meet the air quality standard for ground-level ozone. Ground-level ozone is formed when NO_x and volatile organic compound (VOC) gases react with sunlight, particularly in the warm summer months. Once formed, ozone effects the respiratory system, aggravating asthma, increasing susceptibility to respiratory illnesses like pneumonia and bronchitis, and contributing to permanent lung damage. It can also damage forests, reduce the productivity of agricultural crops, and lead to the decay of monuments and buildings. NO_x is a principal ingredient in the formation of smog.

Based on numerous scientific studies and analyses, EPA and others determined that long-range transport of emissions from upwind areas contributes significantly to persistent nonattainment with the ozone standard in the Northeast and Mid-Atlantic states. To control NO_x emissions across state boundaries and address the regional transport of ozone, the OTC states developed a multi-jurisdictional cap and trade program. The resulting OTC NO_x Budget Program was the first cap and trade

program formed by a group of states and represents the first large-scale application of the cap and trade model to a problem other than acid rain.

The NO_x Budget Program set a regional "budget" (or cap) on NO_x emissions from electric power generating facilities and industrial boilers from a variety of industry types during the "ozone season" (from May 1st through September 30th) beginning in 1999. The ozone

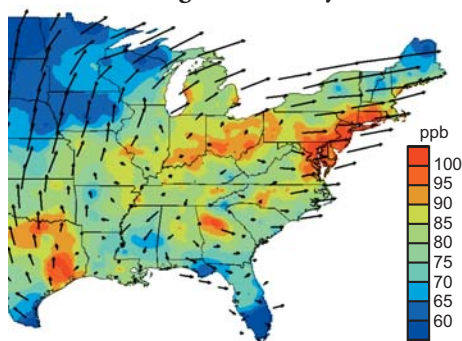
season covers the summer months during which the formation of ozone was found to be of greatest concern. To meet the budget, sources were required to reduce emissions significantly below 1990 baseline levels, and could use emissions trading to achieve the most cost-effective reductions possible.

At the end of each ozone season, sources must demonstrate that their actual ozone season emissions do not exceed the amount of allowances held for that period. Unused allowances may be sold or banked for use in a subsequent ozone season. Regardless of the number of allowances a source holds, it may not emit at levels that would violate other Clean Air Act or state requirements.

As with any cap and trade program, sources can devise their own strategies to comply with NO_x emission restrictions. The ability to trade allowances places a value on emission reductions and encourages sources to develop the most cost-effective emission reduction strategies to achieve the overall required emission reductions. This approach allows the OTC states to achieve greater reductions than could be captured under a traditional regulatory approach for the same overall cost.

Results. The OTC NO_x Budget Program significantly reduced NO_x emissions from large combustion facilities in the Northeast and Mid-Atlantic region. Total regional emissions in the 2002 ozone season were approximately 60 percent below 1990 levels, well under target levels. Significant reductions occurred in all states across

Transport Winds and Ozone Patterns on High Ozone Days

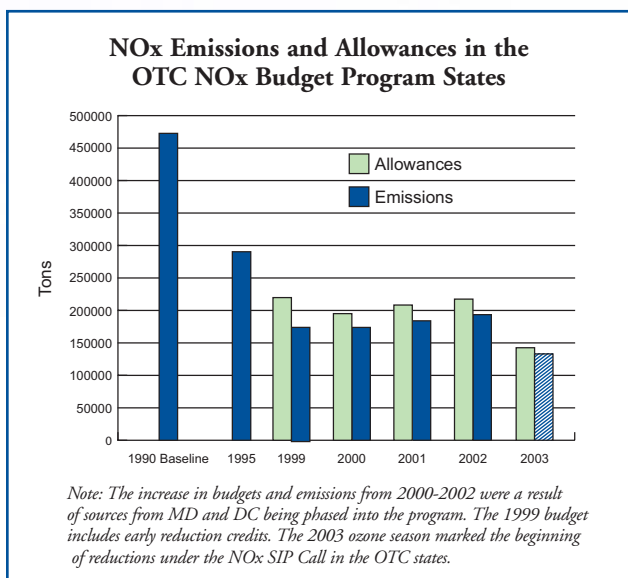


High ozone levels in the Northeast are typically associated with persistent transport from west to east. (Data represent high 90th percentile ozone conditions.)

Source: Ozone Transport Assessment Group



the region and daily peak emissions also declined. The decline in daily peak emissions is particularly important in addressing the effects of ozone on human health. Additionally, these emission reductions proved to be cost-effective.



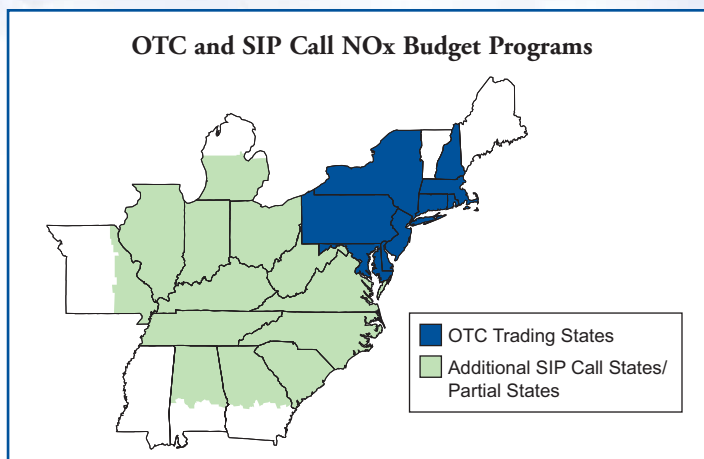
NOx Budget Program units substantially reduced ozone season NOx emissions from 1990 levels, achieving greater reductions than required each year of the program. Source: OTC and EPA

Despite the efforts of the OTC, ambient ozone conditions remain a serious problem in the region, and further emission reduction efforts both within and upwind of the OTC region will be necessary to achieve the ozone standard. In 2003 the OTC implemented a tighter NOx emission cap on sources in the participating states and regional emissions were reduced even further. In 2004 those emission reduction goals were extended to additional states and the District of Columbia through implementation of the NOx SIP call. This tighter emission cap builds on the successful design and implementation of the OTC NOx Budget Trading Program.

NOx SIP Call

In 1998, EPA further addressed the impacts of NOx transport on ozone attainment by requiring ozone season NOx reductions across a region that includes most of the OTC states and also southeastern and Midwestern states that were found by EPA to significantly contribute to another state's inability to achieve the one-hour ozone standard. Affected states under the NOx SIP call were required to submit revised State Implementation Plans (SIPs), begin monitoring emissions in 2003, and reduce emissions beginning in the 2004 ozone season. (A SIP delineates a state's strategies for compliance with the National Ambient Air Quality Standards.) The SIP call established ozone season NOx emission budgets for each affected state and the District of Columbia.

EPA proposed that states use a cap and trade program for large electric generating units and industrial boilers – modeled closely after the OTC NOx Budget Program – to achieve most of the reductions required to meet these budgets. To this end, EPA provided a NOx Budget Trading Program model rule for those states opting to meet the NOx SIP call obligations through a cap



OTC NOx Budget Program and NOx SIP call states.

and trade program. The rule provides a complete trading program, including provisions for applicability, allocations, emissions monitoring, penalties, trading protocols and program administration, and also provides states flexibility to modify certain provisions. All affected states have elected to participate in the trading program.

In April 2004, EPA finalized the second phase of the NOx SIP call rule, completing its rulemaking process. This rulemaking includes parts of Georgia and Missouri in the SIP call and requires a 2007 completion date for a second phase of reductions. The NOx SIP call will reduce NOx emissions by approximately 1 million tons per year. Phase I of the SIP call will achieve about 90% of these emissions reductions, and Phase II will achieve the final 10% of the reductions. EPA projects that these regional NOx reductions will bring the majority of ozone nonattainment areas into attainment with the one-hour ozone standard. It will also help reduce ozone levels in the remaining nonattainment areas east of the Mississippi River. This will limit the amount of more costly local controls states are required to implement.

Next Steps

The success of the OTC NOx Budget Program in reducing NOx in the Northeast is an important step in efforts to reduce ambient ozone levels and affirms the use of cap and trade as an effective means of controlling multiple pollutants over broad regions. Additional environmental progress is expected upon full implementation of the NOx SIP call. Further, EPA is pursuing legislative and regulatory approaches that would use the cap and trade mechanism to provide additional NOx reductions from these sources in order to ensure continued progress towards human health and environmental goals. However, these programs target only a subset of the sources of harmful NOx emissions. Other sources, such as automobiles and other mobile sources, are being addressed using other mechanisms.